Prevention of Rail Movables Overturn (urban & inter-cities Train), by applying of Magnetic fields,

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Abstract:

This design which initially has been registered by the name of karim Ghanbari under the Number of 41647 in inventions and innovations registration headquarters of Islamic Republic of Iran after so many researches, studies, experiments, scientific consideration, Technical calculations, Making of experimental samples which are installable on the Movables. also, the above design could achieve gold medal & first rank in the group of Rail transportation in the inventions & innovations festival in Malaysia in 2008 & Accepted by several countries such as Germany, Russia and Switzerland.

The aim of this design is to compensate the centrifugal force of movable in order to Increase velocity in addition to various factors such as devers, mechanical specifications Of rails & so one else that makes float the space between the rail & wagon by installing The producer cores of magnetic fields under the wagon & four belts which are installed In four edges of wagon that produce a force equal to the centrifugal forces.

According to the implemented experiments on the various samples, the probability of Overturn will be several times as much as before and the safety of movable increases. Using of rail movables have been more than thousands as much as the last century.

The necessary electricity energy is less than 1 minute $\left\{ \lambda_{(s)} = \frac{V\binom{m}{s}}{Ra} \right\}$ [6]

& the necessary time to energy is the function of arc which in the movable moves. $\{T = Rtg\Delta / 2\}$

Symbols List:

m: movable weight (m)
V: movable velocity
R: radius of path which in the movable pass
B: magnetic field [7] $_{(T)} \left\{ \frac{\mu NI}{2\Pi R} \right\}$
M: travey coefficient = (T.M/A) $4\pi*10$
n: number of tube wire cycles
I: current intensity (A)
L: length of core effect (m)
Sine: angle sinuous (D)
λ: Necessary time to energy & current (S)
α: opposite angle to arc (R_{or} D)
T: distance from the beginning part of arc to the angle head which connects two ends of Arc to each others. (m)
Δ: an angle which 2 sides of arc beginning make. (D)
tg: ration of Sin to Cos or opposite side to adjacent side.
(Devers): a traverse slope which is made for more safety and fast moves in
Turn head. (m)
ħu: final stress of core steel that the wire is twisted around it.
P: equal power to current in potential difference (w)
V_i: potential difference of 2 ends of current (volt)
ℓs an angle between 2 tangents & deviation angle of cellutoide
TK: distance of N from CE, length of short tangent
TL: distance of N from CO, length of large tangent
LS: length of cellutoide
SL: length of large chord
Rs: radius of circle which in cellutoide is applied to connect it to the direct branch.
N(W): number of manufactured trains per year
y(t): use time in terms of year
ΔR: cellutoide makes the main circle to keep distance from the direct branch to the Value of ΔR which is called replacement of circle.
δs: an angle which the large chord makes with X axles
S: length of chord which connects this point to the origin of arc.
τ: an angle which the tangent of this point from cellutoide makes with X axles
б: chord angle related to point P with X axles, rotation angle
dl: differential L (R radius to arc)

Introduction:

In this article, it attempted to present the base design summarily. equalization of
Centrifugal forces & forces of magnetic fields cause the rails to be magnetic floater Which results in stable force between wagon & rail that a mechanical lever is made Which can move between rail & wagon, but in this design, an electric lever is applied Instead of mechanical lever which is installed in distance of 38 cm under the angle of
90 degree between rail & wagon and perpendicular to rail so that when the centrifugal Forces are activated in value of ? , forces of magnetic fields are produced in value of $-F\Delta 0$ to compensate the above forces. the necessary time for movable to use this Current is the function of factors such as velocity, weight, opposite angle of force & Length of arc which have correlation to each others.
It is necessary to note that implementation of this design is challenging, which shall be Eliminated favorably. for example, some movables (trains) have potential difference or About (V<400) or a power less than 100 Kw which results in very low current $(P = V_i L)$, so the Forces of magnetic field will be less than the centrifugal forces.
After so many analysis & studies in relation to applying of smaller magnetic fields as Auxiliary forces & inducting of electric load as 45 degree to the head which are 6 Numbers, the forces of magnetic fields decreases to value of $\{6(COS 45)\}$ & the magnetic Field becomes large. If the magnetic field is harmful for movable machineries & parts, We can eliminate the probable loss by applying of paramagnetic materials.
This design is under consideration for mass production for the respective companies.
It is predicted that implementing of this design causes minimum 60% saving in
Transportation system, especially in the industrial countries.

A Review on History of Trains in Several Again & European Industrial Cities:

The first passenger train to the number of T27, 1686 meters long passed from Beijing to Lehasa through The tunnel of frozen land (Konlon) in third Day of January.
This was the first passenger train in Tibet plateau which moved after starting-up Ceremony of Tibet railway that means farewell to the last period of time that there was No railway in highest point of world & it will conduct 75% of in and out transportation Of Tibet. the urban railway had erected in Tehran 120 years ago. establishing of urban Tramway was one of the predicted issues in the concession which had been registered By the name of Baron Julius Du Reuter. Moshir Al Doleh, prime minister of Nasser Aldin Shah granted this concession so that Reuter had right to extract & explore all Natural mines & sources of Iran & erect the throughout railway in Iran.
Erection of subway & urban train has been posed by government authorities of Tehran In various periods of time from 1941. proposition of a person named Vafadar was Approved in board of government, which was about establishment of electric tramway Between Tehran & Shiraz in 1955.
Engineer Korus analyzed subway plan in Tehran in 1958 & one of the German Companies announced its readiness to establish the subway in this city. finally, Tehran'
Subway inaugurated from origin of Imam Khomaini Sq to Sadeghieh Sq in 1999.
Today, 3 lines are active from Imam Khomaini Sq to Sadeghieh to Karaj. subway Network can increase to 7 path lines.
London' subway is the oldest urban train network in the world. When London' subway Inaugurated in Metrojulitan line in 1854 & 41000 passengers used this subway daily. On that time, a train left Padington to Frington within 10 minutes.
The number of passengers of urban train increased to 40 million persons in this city in 1880. the number of underground railway lines increases which was called inner circle In 18884. in the circle line which we observe today, thousands of ideas & researches is Considered In relation to the projects of London' subway.

Discussion:

As you know, if a movable moves in weight of m in radius arc of R in velocity of V, a Force equal to $F = \frac{mv}{R}$ and or $F = \frac{mv^2}{gR}$ as the centrifugal force pull it out which in g is the Weight acceleration & m is the movable mass. a traverse gradient is applied in order to Neutralize the force effect in the railway such as that the external edge of road to be Upper than the internal edge.

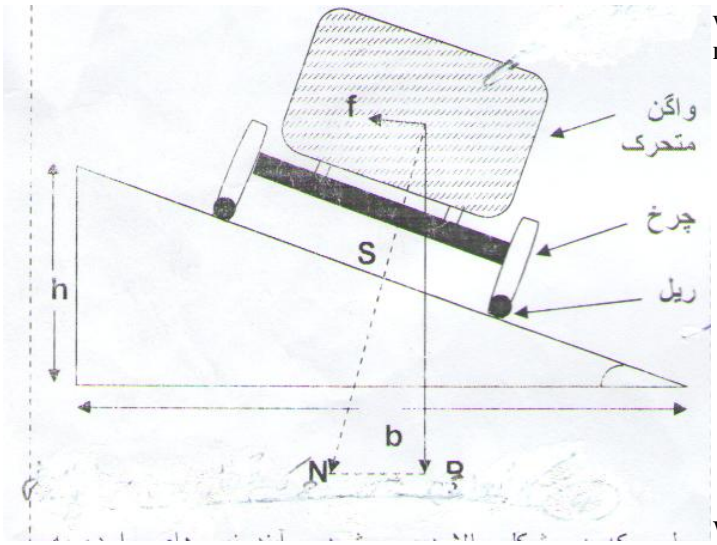


Figure 4: moving of train on a traverse gradient path.

As it observed in above figure, the resultant of imported forces to the vehicles is vector Like N which makes angle α with vertical extension of P. similarity of formed triangles Results in obtaining the path gradient by the following formula**:**

Tg=h/b=f/p

&:f=mv^2/rg

&:s=tga=h/g

Increasing of acceleration & unbalance of movables in turns is the function of various Factors such as designing the simple, compound and pair arcs & ……., velocity of Movables so the designing of paths & arcs is important and it shall be noted to Increasing of unbalance force in path turns, necessary time to current, length of arc & opposite radius & angle of arc.

To calculate T, if we suppose point M in distance of dl from M on a curve & show the

Curvature radius from point M to R: $R = A^{2/L}$ where

$$d\tau = dl / r$$

Therefore: $\tau = \int L / A^2 dL$ or $\tau = L2/2A^2 = \dfrac{L^2}{2R_B.L_B}$ as a result,

$$\frac{\tau}{\tau_s}\left[\frac{L}{LS}\right]^2 \qquad dx = dl.\cos\tau, x = \int_0^l \cos l2/2A^2 dL$$

$$dy = dL.\sin\tau, y = \int_0^L \sin L2/2A^2 dL$$

Given the specifications, coordinates, points & length of arc, dividing the velocity of Movable on length of arc gives the necessary time to electric energy. $V_{R\alpha}$ =t

Designing is very important in this regard. for example, if we want to increase velocity Of an inter-cities train more than 50-60 km/h which has velocity of 90km/h, weight of 120 ton & radius of path equal to 300m that have electric with potential difference of 600 v & 800 kw, we can equalize the produced forces magnetic fields with centrifugal Forces of movable by the following method:

$$\left\{\frac{\left\{\dfrac{\left(12*10^4*(60/36)^2\right)}{4(300)}\right\}}{6(COS45)}\right\} \approx B\left[\frac{8*10^5}{600}\right]2SIN90$$

$$\left\{\frac{\left\{\dfrac{mv^2}{4R}\right\}}{6(COS45)}\right\} \approx BIL\sin\theta$$

We shall make magnetic field for each edge cores of train wagons amounting to (2.7_T) So this field is

$$B = \frac{\mu NI}{2\pi R}$$

equal to:

$$2.7 = \frac{4\pi*10^{-7}(1212.12)N}{2(3.14)0.15}$$

$$\Rightarrow \left[1671.09_n*0.6_H = (1002)\right]$$

$$\Rightarrow [(1002)0.4 = (400.8m)]$$

Consequently, by correct designing of magnetic field and applying of 310.62 meters Long wire, we can produce 4 electric fields/

Correct Method

It is necessary to note that increasing of magnetic field' cores results in very high Velocities of movables so that the movables are safer in the undesirable weather Because of magnetic forces.

Prove:

According to the mechanic and physic laws, resultant of 2 equal forces which move in Opposite to each other is zero. (f) + (-f) = 0

In this state, the centrifugal force is showed by negative mark & the forces of magnetic Fields by positive mark.

$$\left\{\frac{MV^2}{R} \approx \frac{12*10^4(60/3.6)^2}{300} = 11101*10^3\right\}$$

Experimental Results:

This design was considered in similar spaces for 7 times that showed the chance of Overturn in larger turns or equal to 180 degree will be increase as the velocity of Movable increases several times as much as before. an equal force with the centrifugal Force which is the function of rail path & forces of magnetic fields shall not be designed To hinder moving of movable. as soon as the wagon tends to lose its balance, this field Is installed as Z-shaped in distance of force from the floater rail.

In addition to the above studies, the design was implemented on a semi-industrial Sample in scale of 710000 for 3 times that had desirable results.
When we review the history of rail movables, we can conclude that the technology & Innovation of this design is superior than previous designs such as that we observe Reduction of time (4704 minutes) in a path of 200 km long & the mean velocity Decreases (2.4 minutes) per a kilometer.
According to diagrams (3-6)

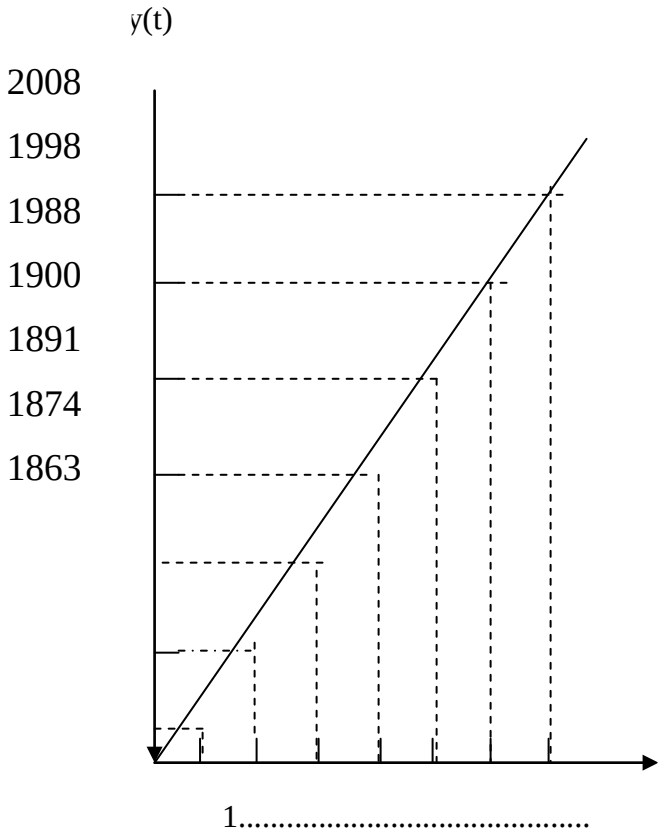


Diagram 2

: consideration of Politan' urban train history in London in last 100 years.

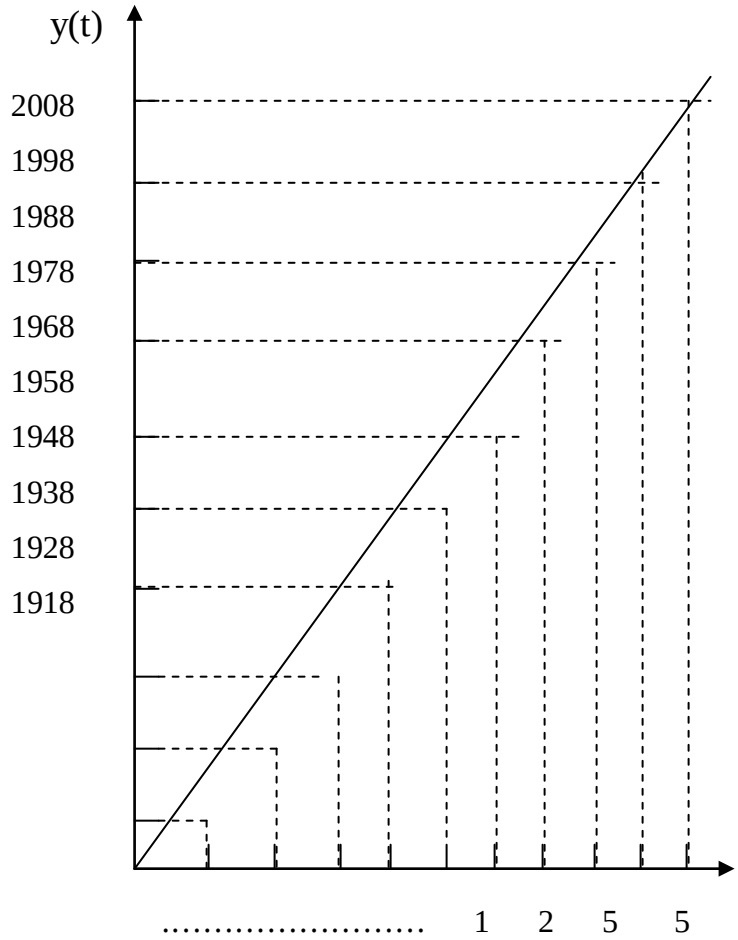
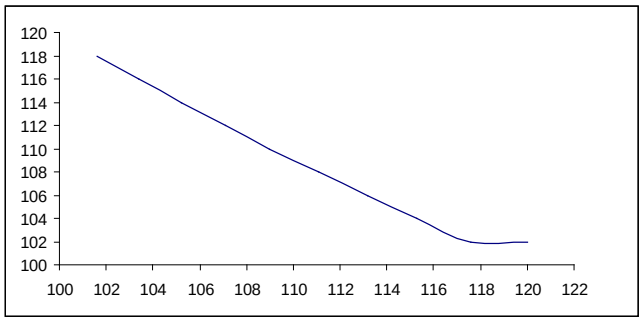


Diagram1:review of tehtan ,urban train history with in last 100years



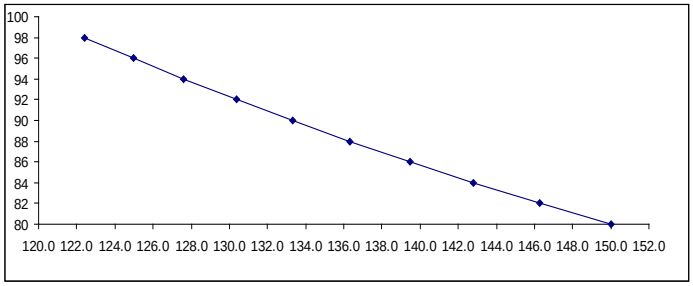
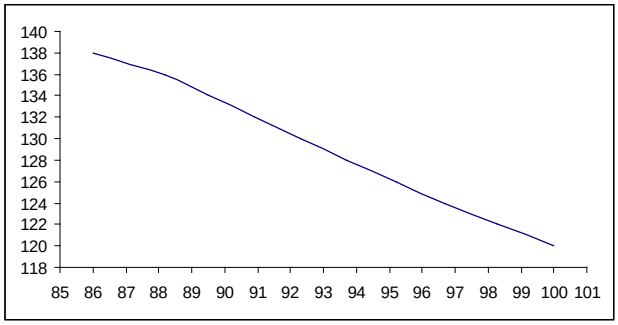


Diagram 3: reduction of time in ¼ length of path.

Diagram 4: reduction of time in ¼ length of path.



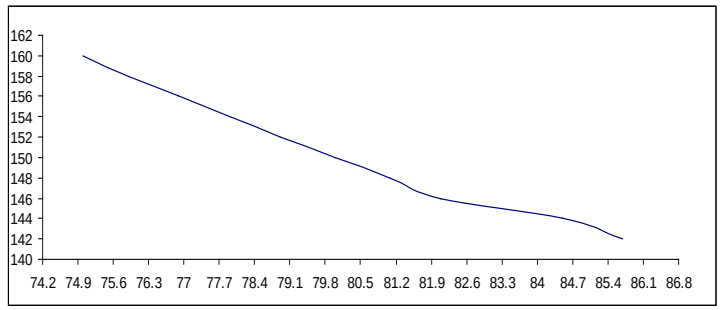


Diagram6: reduction of time in ¼ length of path

Diagram 5: reduction of time in ¼ length of path

L = Ra Ra / $V_{(m/s)}$ = $t_{(s)}$ Maximum necessary time to energy (electric-current) in turns & the most length of Movable path.:

Row radius of path (R), opposite angle to length (α), length of path L (m), movable Velocity (km/h), movable velocity (km/h), necessary & sufficient time to energy- Current (s), out-of-way time L/V+

L/V	(s) t	V (m/s)	V (Km/h)	L (m)	α	(R)	no
33.55	23.55	16.66	60	392.5	100	250 m	1
44.79	34.79	18.05	65	628	200	200 m	2
37.86	27.86	19.44	70	541.65	150	230 m	3
37.18	27.18	20.27	73	551.07	130	270 m	4
35.32	25.32	20.83	75	527.52	120	280 m	5
61.22	51.22	22.22	80	1138.25	250	290 m	6
72.05	62.05	22.77	82	1413	300	300 m	7
92.43	82.43	23.33	84	1923.25	350	350 m	8
73.90	63.90	23.88	86	1526.04	270	360 m	9
102.94	92.94	25	90	2323.6	400	370 m	10
56.38	46.38	24.44	88	1133.54	190	380 m	11
87.03	77.03	23.05	83	1775.67	290	390 m	12
126.64	116.64	26.38	95	3077.2	490	400 m	13
78.01	68.01	27.77	100	1888.71	300	410 m	14
128.13	118.13	20	72	3626.7	550	420 m	15

Table 2: analysis & equalization of necessary magnetic force for each movable edge

Force of magnetic field N, ¼ of centrifugal force N, angle of field force $\Pi/2$, length of Core m, current intensity I, magnetic field $T = \frac{N}{A.M}$, path arc m, movable velocity m/s, Velocity as power 2, movable weight kg , SI.

NO	Kg	V^2 (m/S)	VK (m/S)	R(m)	B(T)	I(A)	L	$Sin90^0$	$Mv^2/4R$	Bil sin
1	10^4×5	277.77	60km/h(1606)	300	5.786	1000	2	1	11573.75	11572
2	10^4× 5.5	378. 86	70Km/h (160)	340	14.562	700	1.5	1	15290	15290.1
3	10^4×6	378.086	70km/h(19.44)	380	14.924	500	2	1	14924.447	14924
4	10^4×4.5	625	90km/h(25)	400	17.578	400	2.5	1	17578.125	17578
5	10^4×4.5	493.827	80km/h(22.22)	600	70716	600	2	1	9259.256	9259.2
6	10^4×6.5	192.901	50km/h(13.88)	250	8.956	700	2	1	12538.565	12538.40
7	10^4×4.12	277.77	80km/h(16.6)	250	12.715	600	1.5	1	11444.124	11443.5
8	10^4×4.7	378.086	70km/h(19.44)	300	15.220	650	1.5	1	14808.368	14839.5
9	10^4×4.1	625	90km/h(25)	360	190772	600	1.5	1	17795./38	17794.8
10	10^4×4.9	625	90km/h(25)	360	15.753	900	1.5	1	21267.361	21266.55
11	10^4×4.5	378.086	70km/h(19.44)	380	6.995	800	2	1	11193.335	11192
12	10^4×5.5	378.086	70km/h(19.44)	300	13.753	700	1.8	1	173280.941	17328.780
13	10^4×5	277.77	60km/h(16.6)	350	4.960	1000	2	1	9920.357	9920
14	10^4×5.3	557.484	85km/n(23.4)	310	17.650	900	1.5	1	23827.945	23827.5
15	10^4×5.2	584.027	87km/h(24.16)	280	23.785	600	1.5	1	27115.539	27114.9
SI	k_g	-	m/s	m	$T = \frac{N}{A.M}$	I	m	$\Pi/2$	N	N

A train in weight of (m=120ton) and velocity of 90km/h in path radius of 300m which Produces 4 cores, moves & the magnetic field equal to centrifugal forces contacted to Sides of train together with 6 auxiliary cores & length of field effect in 2 meter long & Electric energy of 800 kw & potential difference of 660v which is under the angle of 90 Degree so that make the space to be floater. If the field core made in movable iron (Train) overturns in abovementioned turn head or not?
Necessary wire: 375.9m

$$\left.\frac{mv^2}{R}\Big/ 4\right]\Bigg\} \cong \left\{\left[\frac{\mu nI}{2\pi R}\right] IL\sin\right\}$$

$$\left[6(\cos 45)\right]$$

$$\left\{\frac{\left[\dfrac{(12\times10^4(\frac{90}{3.6})^2}{4(300)}\right]}{\left[6(\cos 45\right]}\right\} \cong \left\{\left[\frac{4\times10^7(3759.8)(\frac{800000}{660})}{2\times3.14\times0.15}\right]\frac{8\times10^5}{660})2\times1\right\}$$

$$\left|473\right|.532 \cong \left[\frac{\mu nI}{2\pi R}\right]2424.2424$$

$$\Rightarrow \left|473\right|.532 \cong \left[\frac{4\times10^{-7}\times379\dfrac{8\times10^5}{660}}{2\times3.14\times0.15}\right]2424.2424$$

Produced force= $Fgm(1473|.532n) \cong Fmm(147|\ .532n)$

Share of each machinery in 4 edges of wagon:

$$\left\{\frac{MV^2}{4R} \approx\right.$$

Centrifugal force: $\left\{M*10^{3/4} = 27.77*10^{3}_{N}\right.$

Centrifugal force: $= 27.77*10^{3}_{N}\Big\}$

Forces of magnetic fields:
{f=bilsina}
{bilsina=b(8*10^5/600)2*1}
=>{B=(1104)t}
With regards to the special limitations of electricity, some times, implementing of this Design is challenging. we apply 6 auxiliary cores under the angle of 45 degree in order To make an equal field (1104T**)**
{(1104)(8*10^5/660)2*sin90.=27.636*10^3 n)}
{(+27.636*10^3 n)=(-27.77*10^3n)}

Centrifugal force(n) = magnetic field (n)

Conclusions:
Previous studies showed that implementation of this design is economical in urban & Inter-cities train and has positive effect on the movable velocity, traffic, transportation Of passengers twice as much as before. also this design is guarantees security of Movable against moving of wheels out of rail so that in this design, if the rails are torn, The movable can continue to move on the rails, so the abovementioned design is Economical for the respective companies such as urban subway & railway. increasing of
Velocity is equal to (n) wagons which are added to the railway. moreover, this design Has effect on audio & environmental pollution.

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Registration Date: July 30, 2007

Application No: 38604230
Application Date: June 27, 2007

No. 001385 A/85

Code (30)A(85-1)T

LETTER PATENT

By virtue of Iranian Patent Code regulations hereby certified that patent under title:

Manufactured Robot prevents Railed Machines to Turn Upside Down.

has been invented by

Mr. Karim GHANBARI

-Iranian citizen residing at next to Ghaderi Bazazzi Mohammadian Mosque, Imam Khomeini Ave. Sarpole Zahab, Kermanshah, IRAN

Is registered for twenty years in Iran and this sheet along with patent specifications and drawings has been submitted to the owner of this patent.

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This international exhibition, at which stands are
innovations and new products .**No other event**

We look forward to hearing from you to our bran
Innovators), to welcoming you to **Nuremberg**

Yours
Pre

Internationale
Fachmesse
»Ideen-Erfindungen-Neuheiten«
30. Okt. - 2. Nov. 2008
Messe
Nürnberg

International
Trade Fair
»Ideas-Inventions-New Products«
30 Oct - 2 Nov 2008
Nuremberg
Fair Centre

iENA

09/08/2008

Dear / Mr. Karim Ghanbari
Manufactured robots prevent railed machines to turn upside down.

I would like to thank you for your kindly interest in International Trade Fair Ideas –Invention –New product IENA 2008.
This International event is under patronage of Government of Germany, World Intellectual Property Organization (WIPO), International federation inventor association (IFIA).
The IENA 2008 is a professional marketplace and last year around 800 invention and new products from 32 countries have been presented.
You can be given the opportunity not only to exhibit the state of the art inventions but also to know successful commercialization of inventions through the various accompanying events we provide such as licensing and the technology transfer, etc.
Where else the organizing committee of IENA 2008 has already accepted your invention, we warmly invite you to exhibit your invention at our exhibition, which is to take place from 30 Oct – 2 Nov 2008.
I hope that your invention from Iran will impress the world and explore the world market in IENA 2008.
I am looking forward to meeting you soon in Nuremberg and thank you again for us and our event.
Sincerely yours
Project Management iENA 2008

L. Zetl
Lydia Zetl

IN KOOPERATION MIT:
FINANCIAL TIMES DEUTSCHLAND

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中 國 發 明 協

CHINA ASSOCIATION OF INVENTIO

The 6th INTERNATIONAL EXHIBITION (Su Zhou) INVENTIONS NEW TECHNIQUES AND PRODUCTS

08/08/20

Dear / Mr. Karim Ghanbari

Name of Invention(s): Manufactured robots prevent railed machines to turn upside down.

China association of inventions (CAI) has a pleasure to invite you to participate in the International Exhibition of inventions (Su Zhou)" 17-20 October 2008 in china (IEIS 2008).

CAI and IFIA have invited you and other inventors from around the world to publicize sup inventions, broaden the distribution channel of patented technology transfer through IEIS 2008 4 days event where inventors and researchers showcase their new ideas and produc manufacturers, investors, distributors, licensing firms and general public, Marketing expert information suppliers, patent attorneys and technology transfer firm will also participate in th to help participants commercialization their inventions.

IEIS 2008 not only give you the chance to feel the trend of new high technology from the displ diverse product and new techniques but also serve for consultation on succe commercialization of intellectual property right for new market.

This competition and exhibition is under the patronage of government of china, china associ of inventors and International Federation Inventors Association (IFIA) with 3000 inventors fro countries.

Where else the organizing committee of the exhibition has already accepted your inventior warmly invite you to exhibit your invention at our exhibition, which is to take place from the 1 October 2008.

It is my high hope that we will have an opportunity to welcome you the events.

Looking forward to hearing from you soon.

Best wishes

Yours sincerely

Lu DaHan